

FIGURE 1. Nucleotide and deduced amino acid sequences of HPV18 L1.

10 20 30 40 50 60
 ATGGCTTTGTGGCGGCCTAGTGACAATACCGTATACCTTCCACCTCCTTCTGTGGCAAGA
 1 M A L W R P S D N T V Y L P P P S V A R 20
 70 80 90 100 110 120
 GTTGTAAATACTGATGATTATGTGACTCGCACAAGCATATTTTATCATGCTGGCAGCTCT
 21 V V N T D D Y V T R T S I F Y H A G S S 40
 130 140 150 160 170 180
 AGATTATTAACGTGTGTAATCCATATTTTAGGGTTCCTGCAGGTGGTGGCAATAAGCAG
 41 R L L T V G N P Y F R V P A G G G N K Q 60
 190 200 210 220 230 240
 GATATTCCTAAGGTTTCTGCATACCAATATAGAGTATTTTCGGGTGCAGTTACCTGACCCA
 61 D I P K V S A Y Q Y R V F R V Q L P D P 80
 250 260 270 280 290 300
 AATAAATTTGGTTTACCTGATAATAGTATTTATAATCCTGAAACACAACGTTTAGTGTGG
 81 N K F G L P D N S I Y N P E T Q R L V W 100
 310 320 330 340 350 360
 GCCTGTGCTGGAGTGGAAATTGGCCGTGGTCAGCCTTTAGGTGTTGGCCTTAGTGGGCAT
 101 A C A G V E I G R G Q P L G V G L S G H 120
 370 380 390 400 410 420
 CCATTTTATAATAAATTAGATGACACTGAAAGTTCCCATGCCGCTACGTCTAATGTTTCT
 121 P F Y N K L D D T E S S H A A T S N V S 140
 430 440 450 460 470 480
 GAGGACGTTAGGGACAATGTGTCTGTAGATTATAAGCAGACACAGTTATGTATTTTGGGC
 141 E D V R D N V S V D Y K Q T Q L C I L G 160
 490 500 510 520 530 540
 TGTGCCCCCTGCTATTGGGGAACACTGGGCTAAAGGCACTGCTTGTAAATCGCGTCCTTTA
 161 C A P A I G E H W A K G T A C K S R P L 180
 550 560 570 580 590 600
 TCACAGGGCGATTGCCCCCTTTAGAACTTAAGAACACAGTTTGGGAAGATGGTGATATG
 181 S Q G D C P P L E L K N T V L E D G D M 200
 610 620 630 640 650 660
 GTAGATACTGGATATGGTGCCATGGACTTTAGTACATTGCAAGATACTAAATGTGAGGTA
 201 V D T G Y G A M D F S T L Q D T K C E V 220
 670 680 690 700 710 720
 CCATTGGATATTTGTCACTCTATTTGTAAATATCCTGATTATTTACAAATGTCTGCAGAT
 221 P L D I C Q S I C K Y P D Y L Q M S A D 240
 730 740 750 760 770 780
 CCTTATGGGGATTCCATGTTTTTTTGCTTACGACGTGAGCAGCTTTTGTAGGCATTTT
 241 P Y G D S M F F C L R R E Q L F A R H F 260
 790 800 810 820 830 840
 TGGAATAGGGCAGGTACTATGGGTGACACTGTGCCCTCAATCCTTATATATTAAAGGCACA
 261 W N R A G T M G D T V P Q S L Y I K G T 280
 850 860 870 880 890 900
 GGTATGCGTGCTTCACCTGGCAGCTGTGTGATTCTCCCTCTCCAAGTGGCTCTATTGTT
 281 G M R A S P G S C V Y S P S P S G S I V 300
 910 920 930 940 950 960
 ACCTCTGACTCCCAGTTGTTTAATAAACCATATTGGTTACATAAGGCACAGGGTCATAAC
 301 T S D S Q L F N K P Y W L H K A Q G H N 320

HPV18

L1

FIGURE 1 (CONTINUED)

	970	1000	1010	1020	
	AATGGTATCTGCTGGCATAATCAATTATTTGTTACTGTGGTAGATACCACTCGTAGTACC				
321	N G I C W H N Q L F V T V V D T T R S T				340
	1030	1040	1050	1060	1070
	AATTTAACAATATGTGCTTCTACACAGTCTCCTGTACCTGGGCAATATGATGCTACCAAA				
341	N L T I C A S T Q S P V P G Q Y D A T K				360
	1090	1100	1110	1120	1130
	TTTAAGCAGTATAGCAGACATGTTGAAGAATATGATTTGCAGTTTATTTTTCAGTTATGT				
361	F K Q Y S R H V E E Y D L Q F I F Q L C				380
	1150	1160	1170	1180	1190
	ACTATTACTTTAACTGCAGATGTTATGTCCTATATTCATAGTATGAATAGCAGTATTTTA				
381	T I T L T A D V M S Y I H S M N S S I L				400
	1210	1220	1230	1240	1250
	GAGGATTGGAACCTTTGGTGTTCCTTCCCCCCCCGCAACTACTAGTTTGGTGGATACATATCGT				
401	E D W N F G V P P P P T T S L V D T Y R				420
	1270	1280	1290	1300	1310
	TTTGTACAATCTGTTGCTATTACCTGTCAAAAGGATGCTGCACCAGCTGAAAATAAGGAT				
421	F V Q S V A I T C Q K D A A P A E N K D				440
	1330	1340	1350	1360	1370
	CCCTATGATAAGTTAAAGTTTGGAAATGTGGATTTAAAGGAAAAGTTTCTTTGGACTTA				
441	P Y D K L K F W N V D L K E K F S L D L				460
	1390	1400	1410	1420	1430
	GATCAATATCCCCTTGGACGTAAATTTTGGTTTCAGGCTGGATTGCGTCGCAAGCCCACC				
461	D Q Y P L G R K F L V Q A G L R R K P T				480
	1450	1460	1470	1480	1490
	ATAGGCCCTCGTAAACGTTCTGCTCCATCTGCCACTACGTCTTCTAAACCTGCCAAGCGT				
481	I G P R K R S A P S A T T S S K P A K R				500
	1510	1520			
	GTGCGTGTACGTGCCAGGAAGTAA				
501	V R V R A R K *				508

HPV18

L1

FIGURE 2. Amino Acid Variations In L1 Protein Of HPV18

	<u>Amino Acid Position in L1</u>				
	<u>30</u>	<u>88</u>	<u>283</u>	<u>323</u>	<u>338</u>
HPV18 published	P	T	P	V	P
HPV18 Merck	R	N	R	I	R
#354	R	N	R	V	R
#556	R	N	R	V	R
#755	-	-	R	V	R
#697	-	-	R	V	R
#795	-	-	R	V	R
#23	-	-	R	I	R

SOURCES:

HPV18 published: DNA sequence (GenBank accession no. X05015; Cole, S.T. and Danos, O., 1987, J. Mol. Biol. 193: 599-608).
Originally cloned from a cervical carcinoma of a Brazilian patient (Boshart, M., et al., 1984, EMBO J. 3: 1151-1157).

HPV18 Merck: Cloned from cell line SW756 derived from a cervical carcinoma (Freedman, R.S., et al., 1982, In Vitro 18: 719-726). SW756 was established in 1974 from biopsy material collected in Texas.

#354-#795: Clinical specimens collected at Veterans Administration Medical Center, Indianapolis, Indiana.

#23: Clinical specimen collected at Albert Einstein Medical Center, Philadelphia, Pennsylvania.

FIGURE 3. Nucleotide and deduced amino acid sequences of HPV18 L2.

	10	20	30	40	50	60	
	ATGGTATCCCAACCGTGCCGCACGACGCAAACGGGCTTCGGTGACTGACTTATATAAAACA						
1	M	V	S	H	R	A	20
	70	80	90	100	110	120	
	TGTAACAATCTGGTACATGTCCATCTGATGTTGTTAATAAGGTAGAGGGCACCACGTTA						
21	C	K	Q	S	G	T	40
	130	140	150	160	170	180	
	GCAGATAAAATATTGCAATGGTCAAGCCTTGGTATATTTTGGGTGGACTTGGCATAGGT						
41	A	D	K	I	L	Q	60
	190	200	210	220	230	240	
	ACTGGAAGTGGTACAGGGGGTTCGTACAGGGTACATTCCATTGGGTGGGCGTTCCAATACA						
61	T	G	S	G	T	G	80
	250	260	270	280	290	300	
	GTTGTGGATGTCCGGTCTACACGTCCTCCAGTGGTTATTGAACCTGTGGGCCCCACAGAC						
81	V	V	D	V	G	P	100
	310	320	330	340	350	360	
	CCATCTATTGTTACATTAATAGAGGACTCAAGTGTGTTACATCAGGTGCACCTAGGCCT						
101	P	S	I	V	T	L	120
	370	380	390	400	410	420	
	ACTTTTACTGGCAGCTCTGGGTTTGATATAACATCTGCTGGTACAACTACACCTGCAGTT						
121	T	F	T	G	T	S	140
	430	440	450	460	470	480	
	TTGGATATCACACCTTCGTCTACCTCTGTTTCTATTTCACAACCAATTTACCAATCCT						
141	L	D	I	T	P	S	160
	490	500	510	520	530	540	
	GCATTTTCTGATCCGTCATTATTGAAGTTCACAACTGGGGAGGTGTCAGGTAATGTA						
161	A	F	S	D	P	S	180
	550	560	570	580	590	600	
	TTTGTGGTACCCCTACATCTGGAACACATGGGTATGAAGAAATACCTTTACAAACATTT						
181	F	V	G	T	P	T	200
	610	620	630	640	650	660	
	GCTTCTTCTGGTACGGGGGAGGAACCCATTAGTAGTACCCCATTCCTACTGTGCGGCGT						
201	A	S	S	G	T	G	220
	670	680	690	700	710	720	
	GTAGCAGGTCCCCGCTTTACAGTAGGGCTACCAACAAGTGTCTGTGGCTAACCCCTGAG						
221	V	A	G	P	R	L	240
	730	740	750	760	770	780	
	TTTCTTACACGTCCATCCTCTTTAATTACCTATGACAACCCGGCCTTTGAGCCTGTGGAC						
241	F	L	T	R	P	S	260
	790	800	810	820	830	840	
	ACTACATTAACATTTGAGCCTCGTAGTAATGTTTCTGATTGAGATTTTATGGATATTATC						
261	T	T	L	T	F	E	280
	850	860	870	880	890	900	
	CGTTTACATAGGCCTGCTTTAACATCCAGGCGTGGTACTGTGCGCTTTAGTAGATTAGGT						
281	R	L	H	R	P	A	300
	910	920	930	940	950	960	
	CAAAGGGCAACTATGTTTACCCGTAGCGGTACACAAATAGGTGCTAGGGTTCACTTTTAT						
301	Q	R	A	T	M	F	320

HPV18

L2

FIGURE 3 (continued)

970 990 1000 1010 1020
 CATGATATAAGTCCTATTGCACCCTCCCCAGAATATATTGAACTGCAGCCCTTAGTATCT
 321 H D I S P I A P S P E Y I E L Q P L V S 340

 1030 1040 1050 1060 1070 1080
 GCCACGGAGGACAATGGCTTGTGATATATATGCAGATGACATAGACCCTGCAATGCCT
 341 A T E D N G L F D I Y A D D I D P A M P 360

 1090 1100 1110 1120 1130 1140
 GTACCATCGCGTCCTACTACCTCCTCTGCAGTTCTACATATTGCCCCACTATATCATCT
 361 V P S R P T T S S A V S T Y S P T I S S 380

 1150 1160 1170 1180 1190 1200
 GCCTCTTCCTATAGTAATGTAACGGTCCCTTTAACCTCCTCTTGGGATGTGCCTGTATAC
 381 A S S Y S N V T V P L T S S W D V P V Y 400

 1210 1220 1230 1240 1250 1260
 ACGGGTCCTGATATTACATTACCACCTACTACCTCTGTATGGCCCATTGTATCACCACACA
 401 T G P D I T L P P T T S V W P I V S P T 420

 1270 1280 1290 1300 1310 1320
 GCCCCTGCCTCTACACAGTATATTGGTATACATGGTACACATTATTATTGTGGCCATTA
 421 A P A S T Q Y I G I H G T H Y Y L W P L 440

 1330 1340 1350 1360 1370 1380
 TATTATTTTATTCCTAAAAAGCGTAAACGTGTTCCCTATTTTTTGCAGATGGCTTTGTG
 441 Y Y F I P K K R K R V P Y F F A D G F V 460

 GCGGCCTAG
 461 A A • 463

HPV18

L2

FIGURE 4. Immunoblot of HPV18 L1 protein expressed in yeast cells.

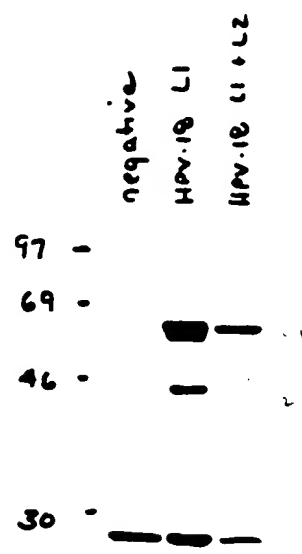


FIGURE 5. Immunoblot of HPV18 L2 protein expressed in yeast cells.

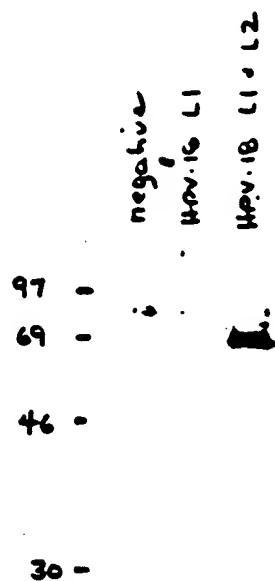
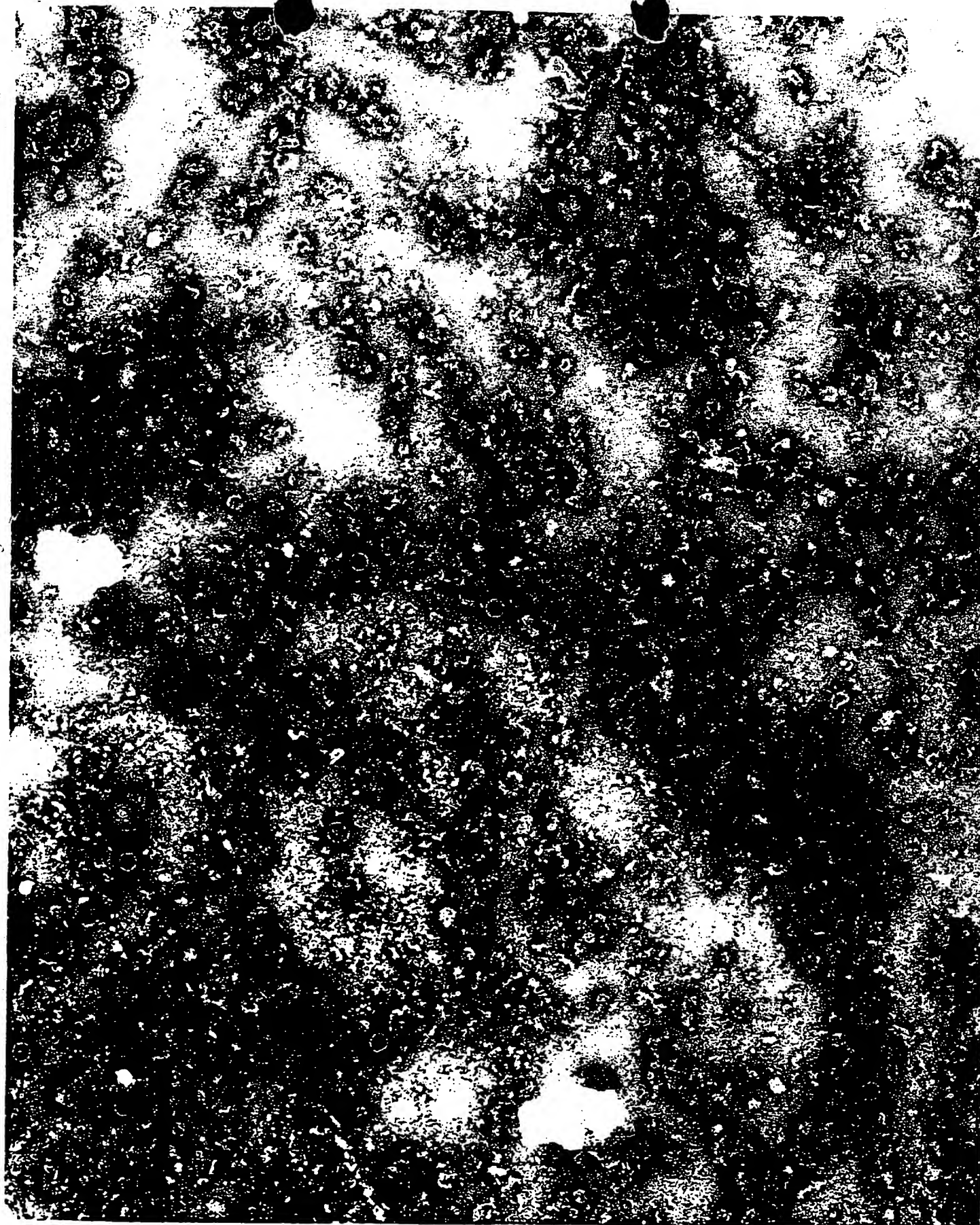


FIGURE 6. Electron micrograph of HPV18 L1 VLPs.



STRUCTURE PROBE*

